

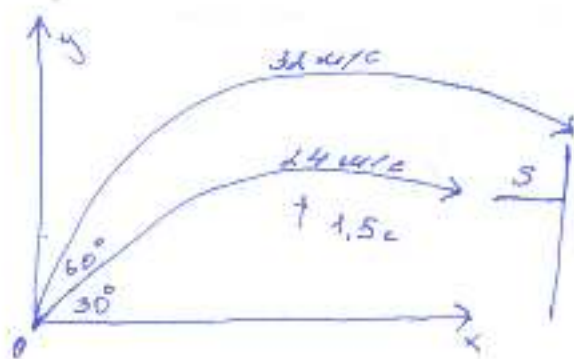
1. Задача

Дано:

$$\alpha = 30^\circ \text{ C } V = 24 \text{ м/с}$$

$$\alpha = 60^\circ \text{ C } V = 32 \text{ м/с}$$

$$S = ? \quad t = 1,5 \text{ с}$$



Решение:

$$S_1 = \frac{V \cdot t + g t^2}{2} = 72.02 \text{ м} = \frac{32 \cdot 1.5 + 9.8^2}{2} = 72.02 \text{ м}$$

$$S_2 = \frac{V \cdot t + 9.8^2}{2} = \frac{24 \cdot 1.5 + 9.8^2}{2} = 66.02 \text{ м}$$

$$S = 72.02 - 66.02 = 6 \text{ м}$$

Ответ: $S = 6 \text{ м}$.

3.

Дано:

$$R_1 = 8 \text{ см} = 0,8 \text{ дм}$$

$$R_2 = 20 \text{ см} = 2 \text{ дм}$$

$$q_1 = 14 \text{ кг}$$

$$q_2 = -7 \text{ кг}$$

$$q = ?$$

Решим:

$$\frac{q_1}{R_1} = \frac{q_2}{R_2} = q \cdot \frac{(q_1 + q_2)R}{R_1 + R_2} = \frac{(14 + (-7)) \cdot 2}{0,8 + 2} = 5 \text{ кг}$$

Ответ: $q = 5 \text{ кг}$

4.

Дано:

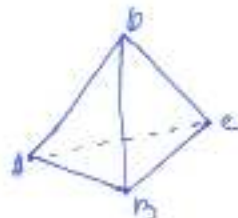
треуголь
ABCD

$$R_0 = 20 \text{ см}$$

$$AC R_0 = ?$$

$$\frac{R_0}{ABCD} \cdot 2 = 8 \text{ см}$$

Ответ: $AC R_0 = 8 \text{ см}$



$$\begin{aligned} 1) h_1 &= 3 \text{ км} = 3 \cdot 10^3 \text{ м} \\ r_1 &= 2 \cdot 10^3 \text{ м} = 2 \cdot 10^3 \text{ м} \\ \theta_1 &= 14.05^\circ \\ \theta_2 &= -14 \text{ км} \end{aligned}$$

$$\frac{r_1}{R_2} = \frac{h_1}{R_2} \quad \theta_2 = \frac{(\theta_1 - \theta_2) R_2}{h_1 + h_2} = \frac{(14 - 1) \cdot 2}{6 \cdot 2 + 2} = 54.4^\circ$$

$$\begin{aligned} 1) \alpha &= 30^\circ \\ v_1 &= 24 \text{ км/с} \\ \alpha &= 60^\circ \\ v_2 &= 32 \text{ км/с} \\ S &= 1.5 \text{ с} \\ S &= 1 \end{aligned}$$

$$\begin{aligned} v_{1x} &= 24 \sin 30^\circ = 24 \cdot \frac{1}{2} = 12 \\ v_{2x} &= 32 \sin 60^\circ = 32 \cdot \frac{\sqrt{3}}{2} = 16\sqrt{3} \\ v_1 &= v_1 \cos 30^\circ \\ v_{1y} &= v_1 \sin 30^\circ = \frac{v_1}{2} \\ v_{2y} &= v_2 \sin 60^\circ = \frac{v_2 \sqrt{3}}{2} \end{aligned}$$

$$\begin{aligned} S &= \sqrt{(v_1 \cos 30^\circ + v_2 \cos 60^\circ)^2 + (v_1 \sin 30^\circ - v_2 \sin 60^\circ)^2} \\ &= \sqrt{(v_1 \cos 30^\circ + v_2 \cos 60^\circ)^2 + (v_1 \sin 30^\circ - v_2 \sin 60^\circ)^2} \\ &= \sqrt{v_1^2 \cos^2 30^\circ + 2v_1 v_2 \cos 30^\circ \cos 60^\circ + v_2^2 \cos^2 60^\circ + v_1^2 \sin^2 30^\circ - 2v_1 v_2 \sin 30^\circ \sin 60^\circ + v_2^2 \sin^2 60^\circ} \\ &= \sqrt{v_1^2 (\cos^2 30^\circ + \sin^2 30^\circ) + v_2^2 (\cos^2 60^\circ + \sin^2 60^\circ) + 2v_1 v_2 (\cos 30^\circ \cos 60^\circ - \sin 30^\circ \sin 60^\circ)} \\ &= \sqrt{v_1^2 + v_2^2 + 2v_1 v_2 \cos(30^\circ + 60^\circ)} \\ &= 1.5 \sqrt{24^2 + 32^2 + 2 \cdot 24 \cdot 32 \cdot \cos(90^\circ)} \\ &= 1.5 \sqrt{24^2 + 32^2} = 1.5 \cdot 40 = 60 \text{ км} \end{aligned}$$